

REDISCOVERY OF CTENERYTHRAEUS BERLESE 1918 (ACARINA,  
TROMBIDIIDAE), WITH REDESCRIPTION, AND ITS SYNONYMY WITH  
SPATHULATHROMBIUM WOMERSLEY 1945

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SUMMARY

The examination of a small collection of mites from New Caledonia has shown a species of Trombidiid mite answering to *Erythraeus* (*Ctenerythraeus*) *trombidioides* Berlese 1918 (from New Caledonia), which was placed by its author (and subsequent writers) in the family Erythraeidae. Although Berlese's type is at present inaccessible, the correspondence of the adult mite to Berlese's account (allowing for some obscurities in the latter's Latin description), both in descriptive and metric data, is excellent, and there appears no reason to doubt the identity. The mite also corresponds to *Spathulathrombium* Womersley 1945, which becomes a synonym of *Ctenerythraeus* Berlese 1918.

*Ctenerythraeus trombidioides* is redescribed from the new material, both adult and nymph. The species comes nearest to *Ctenerythraeus myloriensis* (Womersley 1945) from South Australia. Distinguishing characters between these two species are given. Apart from these two species the genus contains *C. southcotti* (Wom. 1934) (the genotype of *Spathulathrombium*), *C. queenslandiae* (Wom. 1942), *C. maximus* (Wom. 1945), and *C. fulgidus* (Wom. 1945). All except the genotype are from the Australian mainland.

INTRODUCTION

In 1918 Berlese described *Erythraeus* (*Ctenerythraeus*) *trombidioides* as a new subgenus and species of Erythracid mite, of Trombidiid facies, from New Caledonia, where it had been collected by the expedition of "Sarrasin et Roux". Although listed by Baker and Wharton (1952) among the Erythracidae, up to the present no subsequent worker has made any contribution to our knowledge of that mite.

Berlese had stated that in *Ctenerythraeus* there was a comb-like row of spines along the dorsal border of the palpal tibia, as in the Trombidiidae ("*Trombidiurum more*"). Although such a comb is a common feature in many Trombidiid mites (particularly among the subfamily Microtrombidiinae Thor 1935), for an Erythracid the mite must have been very unusual indeed. In certain genera of Erythracid mites, e.g. the European *Erythraeus* Latreille 1806 and the Australian *Parerythraeus* Southcott 1946, there is a row of a small number of conical spines along the inferior border of the palpal tibia (and also the genu), but nothing similar had been observed along the dorsal border of the palp in any known Erythracid mite.

For some time the present writer has been attempting to clarify the systematics of the Erythraeidae, and in an attempt to clarify the status of *Ctenerythraeus* he wrote to Mr. L. J. Dumbleton, entomologist to the South Pacific Commission, asking for acarine material from New Caledonia. In the first batch of alcohol-preserved specimens from New Caledonia, from Mt. Mori, at 4000 ft., there were two reddish mites of Erythracid or Trombidiid facies. These corresponded to the genus *Spathulathrombium* Womersley 1945. One specimen was an adult, the other a nymph, but clearly the two specimens were of the same species. The spiky (longer) setae over the dorsum was, however, a feature seen in certain of the Erythraeidae as well as in some of the Trombidiidae.

On comparing these two mites with Berlese's Latin description of *Ctenerythraeus trombidioides* it was found that the latter corresponded in all major

details with the adult specimen, with a good correspondence to the metric data supplied by Berlese. Unfortunately, it is not possible for the writer to compare the specimens with Berlese's type, as no facilities are available at the institution which houses the Berlese collection in Florence.

As few modern students of the Acarina read Latin with any facility, and as in places Berlese's account is somewhat obscure, the following translation of Berlese's account is offered, with explanatory comment (the writer is indebted to Mr. J. L. Gough for aid with the translation):

"Subgenus *Ctenerythraeus* Berl. n. subgen. From (ex) the genus *Erythraeus*. The penultimate segment of the palpi with a great comb, armed, as in the Trombididae. The anterior legs with the tarsi dilated, but below rather projecting (prominent), as occurs in the Trombididae; the other tarsi elongate-cylindrical, of the same thickness as the tibiae (metatarsi, R.V.S.). Crista metopica very short, not produced further back than the line of the second coxae. Type *E. (C.) trombidioides* Berl.

"*Erythraeus (Ctenerythraeus) trombidioides* Berl. 1918 n. sp.—Cinnibar, elongately heart-shaped, the whole trunk densely clothed with red papillae, compressedly clavate, all of these being thickly aciculate (i.e. covered with little needles, R.V.S.), to 50 $\mu$  long, between which, equally and densely scattered, are cylindrical setae, three or four times as long as the foregoing, i.e. 150-200 $\mu$  long, curved back in the shape of a bow, and finely needle-like. Crista metopica 300 $\mu$  long. Eyes paired on both sides (the anterior the larger), placed a little above (i.e. before, R.V.S.) the level of the posterior area of the crista, and quite close to the crista. Palpi long and slender, the penultimate segment cylindrical, 120 $\mu$  long, 30 $\mu$  wide, provided with a most beautiful comb occupying the whole of the dorsum of the segment, nevertheless bent inwardly. The comb is composed of spines, about 25 in number, decreasing in thickness in order from the apical one, to which the palpal claw is adpressed, and (the apical one) scarcely feebler (than the claw). There are also on the inner side, basally, in this segment, 10 setae, longer and thinner, arranged in a transverse series which is close and parallel to the posterior margin of the segment. The most posterior segment, that is (*sive*) the tentaculum (?femur, R.V.S.) is elongately almond-shaped, very much thinned out toward the apex and produced to the line of the base of the (?) foot (*unguis*) of the preceding segment; the whole provided with evenly scattered hairs, longer, thin. The skin of the palpi and legs (*pedes*) is provided with areolae, and not with papillae, as occurs in the trunk, but all segments of the legs are provided thickly with only the cylindrical setae, similar to those on the trunk, but smaller, and with other slender hairs of simple form, but very short. The anterior tarsi are about twice as thick as the tibiae (metatarsi, R.V.S.) and are nearly straight dorsally, even slightly concave, little heightened; ventrally strongly arched and prominent. Tarsal length 500 $\mu$ , width 190 $\mu$ . Tibia (metatarsus) 500 $\mu$  long, 120 $\mu$  wide. (Animal) 2500 $\mu$  long, 1650 $\mu$  wide. Leg I 2200 $\mu$  long.

"Habitat in New Caledonia (Prony). One example, collected by 'Cll. Sarasin et Roux'."

The above account may be compared with the following description from two fresh specimens from New Caledonia, considered by the present writer to belong to the same species.

#### *Redescription of Ctenerythraeus trombidioides (Berlese 1918)*

Figs. 1-3

Adult (Figs. 1 A-C, 2) (from ACB 608): Colour (in alcohol) reddish. Body ovoid, 1965 $\mu$  long to tip of mouth cone, 1250 $\mu$  wide. The dorsum is provided with a crista which bears a single sensillary area, at its posterior end.

The sensillary area is typical of the Trombidiidae (see Fig. 2), pyriform, strongly chitinized, with each of the two sensillary setae set in a projecting boss. Sensillary setae about  $220\mu$  long, filiform, nude. Sensillary pits  $43\mu$  apart (distance between centres). The anterior end of the crista tapers to a blunt point, ending somewhat obscurely, but without any sign of a sensillary area. Total length of crista  $395\mu$ . Sensillary pits (centres of)  $20\mu$  ahead of posterior end of crista. Each sensillary boss is surrounded by a lanceolate group of reticulations, the axis of this reticular pattern lying obliquely forwards and medially.

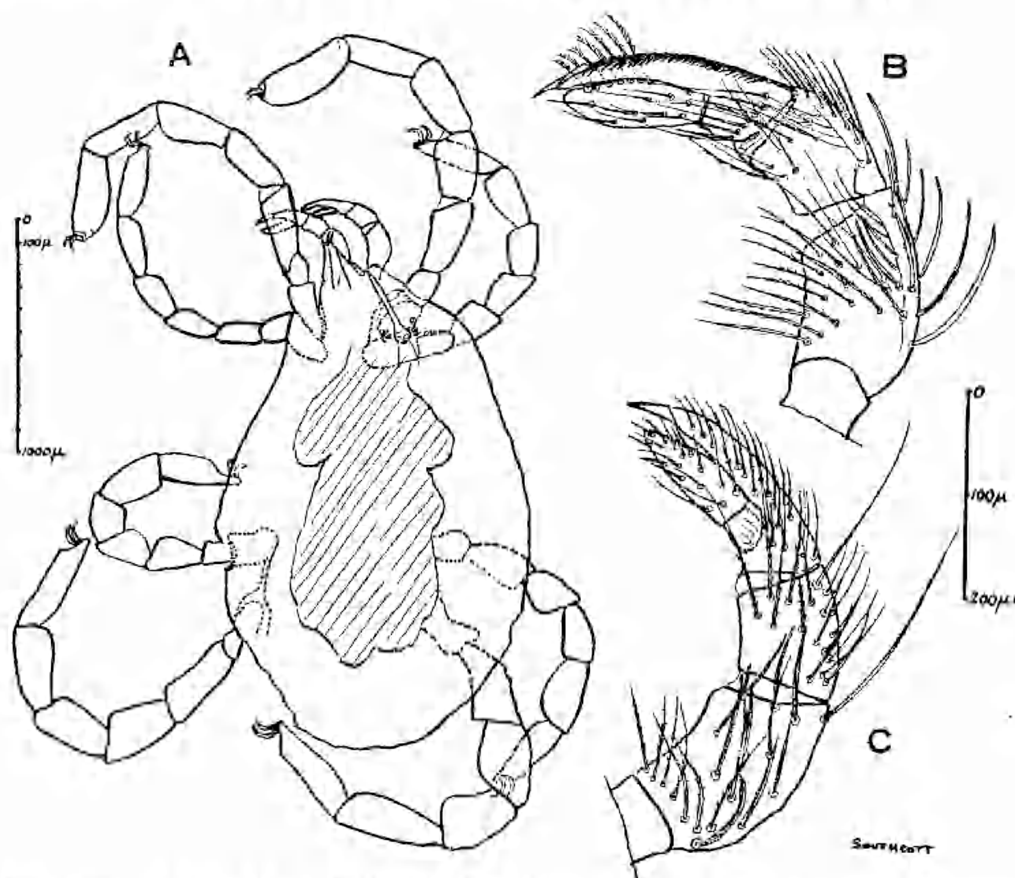


Fig. 1.—*Clenerythraeus trombidioides* (Berlese, 1918). Adult. A, entire, mounted specimen, by transmitted light, with setae omitted (ventral structures stippled); B, inner face of right palp; C, outer face of right palp. (Figs. 1 B, C to scale on right.)

Eyes two on each side, on a distinct ocular shield. Anterior eye the larger, circular,  $60\mu$  across. Posterior eye circular,  $36\mu$  across, placed rather medial to the anterior eye.

Dorsum thickly clothed with setae of two distinct types, which are so dense as to obscure underlying structures, e.g. the eyes and the crista. The longer dorsal setae (macrosetae) are long, stiff, bent, needle-like or slightly lanceolate with adpressed minute rasp-like serrations, which latter are scarcely visible even along the edges of the setae; these setae arising from large setae bases, and are from  $77$ - $190\mu$  long, increasing gradually in length towards the posterior part of the dorsum. The shorter setae (microsetae) are leaf-like, arched dorsally, and with their dorsal aspects covered with rows of strong projections, these being ciliations in the proximal half of the seta, and becoming blunter in the distal half, and often terminally the seta has two conical denticles;

ventrally there is a median keel, along each side of which is a row of long, strong-pointed ciliations; leaf-like setae 34-42 $\mu$  long. The seta bases of these smaller setae are weaker than in the long, sword-like setae. The setation of the body is so dense that it is, in the intact mounted specimen, difficult to see setae suitable for measuring the lengths; this being more so with the leaf-like setae than with the sword-like macrosetae.

The ventral surface is not available for measurement and description in the mounted specimen; this applies also to the genitalia.

The legs are for the most part clothed with setae similar to the sword-like setae of the trunk, but these setae rather more slender, and on the dorsal surfaces of the legs, more curved. In fact, on the dorsal surfaces of the legs these setae are thicker, blunted at the tip, and not quite smooth in their contour, giving the impression of having faint adpressed serrations. This appearance is also seen on the other setae. The thicker of these setae have a faint suggestion of a keel, and down each side of this keel is a series of fine-pointed ciliations. Among these setae are smaller, more slender, simple, curved spiniform setae, which are present also on the other segments, particularly on the genu and metatarsus (tibia). On the end of each tarsus is a pit into which the tarsal claws can be folded back (the dorsoterminal fossa). Tarsal claws II, III and IV strong; on I weaker. Tarsus I appears rather inflated, particularly inferiorly, and is covered with short, tapering, ciliated setae, interspersed among which are numerous fine-pointed, simple spiniform setae, as well as a few longer setae, the latter spiniform with faint adpressed rasp-like roughenings, and about twice as long as the other setae. The setae on tarsus II are almost all ciliated, somewhat coarser than on I. Legs robust. Tarsus I 420 $\mu$  long by 175 $\mu$  high; tarsus II 338 $\mu$  long by 104 $\mu$  high, tarsus III 370 $\mu$  long by 112 $\mu$  high, IV 473 $\mu$  long by 125 $\mu$  high. Metatarsus I 360 $\mu$  long, II 280 $\mu$ , III 320 $\mu$ , IV 450 $\mu$ .

The cheliceral fangs are typically Trombidiid, curved, convex downwards, pointed for grasping and piercing, articulated (hinged) normally. The fang about 56 $\mu$  long, with a faint row of dorsal denticles, similar to that of the nymph (q.v.—those in the adult are a little obscured in the preparation).

The palpi are rather slender, and provided with setae as figured. The palpal trochanter nude. Palpal femur dorsally and laterally with long, strong, blunted setae with adnate ciliations, to 135 $\mu$  long. At the distal end of the dorsum of the palpal femur there is a long outstanding spiniform seta, 217 $\mu$  long (which is very faintly indented, indicating its origin as a modified normal type seta), clearly of a tactile function. The superior edge of the palpal femur (and genu) tends to be rolled inwards, at least in the mounted preparation. The medial and inferior surfaces of the palpal femur with long-pointed, lightly ciliated setae, to 112 $\mu$  long. Palpal genu dorsally provided with a group of stiff spiniform setae along its more distal part, about 20 in number, to 76 $\mu$  long, arising along the dorsal border. Elsewhere the palpal genu is provided with pointed somewhat more flaccid ciliated setae, to 80 $\mu$  long. At the distal end of its dorsum, rather laterally, is a long outstanding tactile spine, as in the palpal femur, 173 $\mu$  long. The palpal tibia is also provided proximally on its medial surface with an irregular row of rather stiff spiniform setae, 11 in number, roughly parallel to the posteromedial border of the tibia; elsewhere the medial surface of the palpal tibia is bare of setae. Along the dorsal border of the palpal tibia is a pectinate row of 27 stiff, blunted spines, bent inwards (medially), and overlapping each other in medial view, so much so they are difficult to count (see Fig. 1 B). In the middle part the free edge of the spines lifts up to reveal the bases of the spines. The terminal (most anterior) spine is the largest, and is 30 $\mu$  long; it is alongside the palpal tibial claw. Palpal tibia with a large normal claw. The palpal tibia carries no thick external spine (a feature of some Trombidiidae).



Palpal tarsus tapering, with many setae, some tapering and spiniform, some ciliated along one side (see Fig. 1 B). On the dorsal border of the palpal tarsus is a linear group of setae, long, ciliated along one side, forming almost a pectinate array; these are clearly tactile in function, to aid the grasping of the palpus.

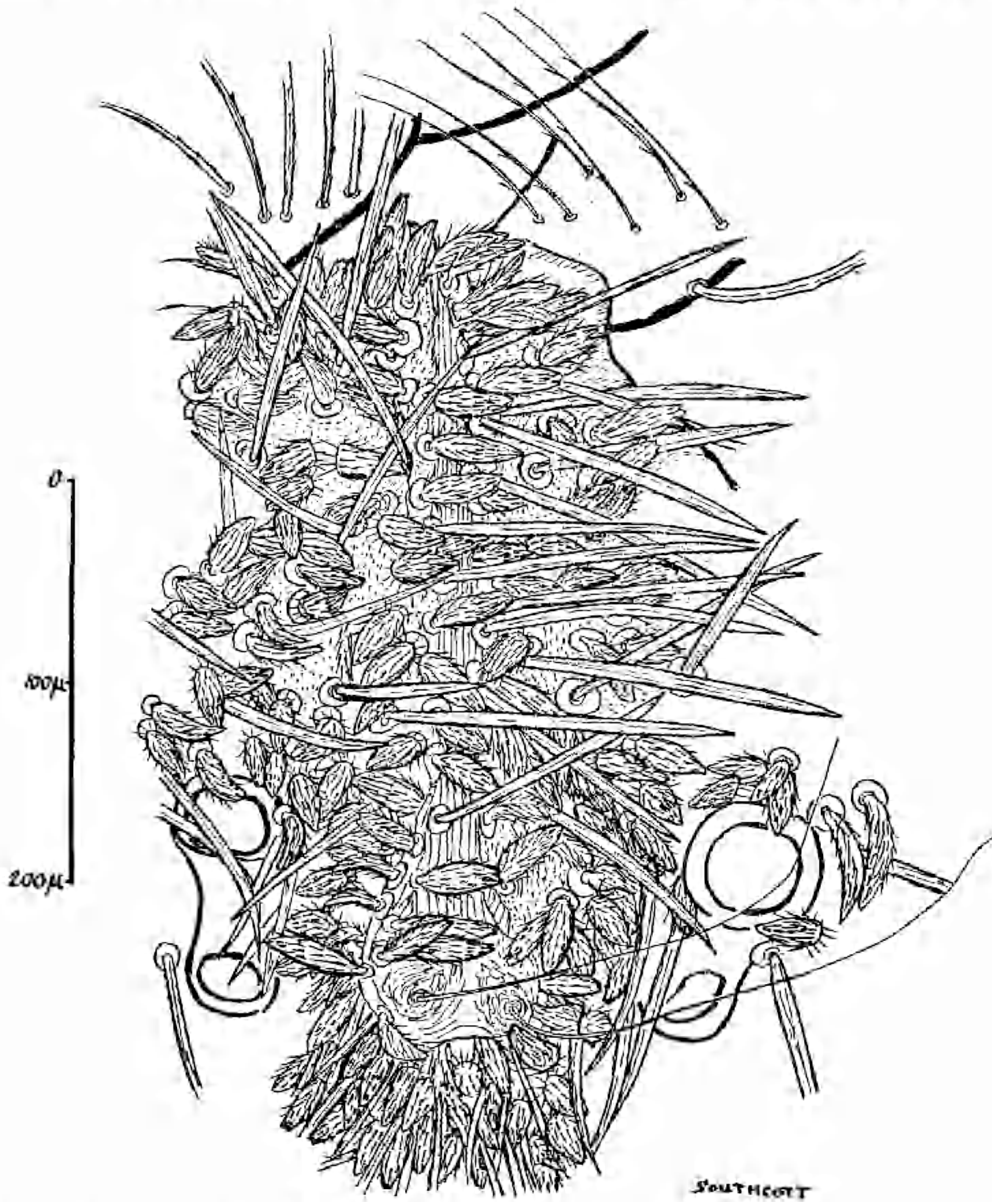


Fig. 2.—*Ctenerythraeus trombidioides* (Berlese, 1918). Adult. Crista and eyes, and part of dorsum and palpi, to show setation.

### Description of Nymph

Fig. 3

Colour (in alcohol) reddish. Body ovoid, the mounted specimen (ACB 609) being  $1175\mu$  long to the tip of the rostrum (mouth cone), and  $675\mu$  wide at its widest part. The animal presents a rather bristly appearance from the

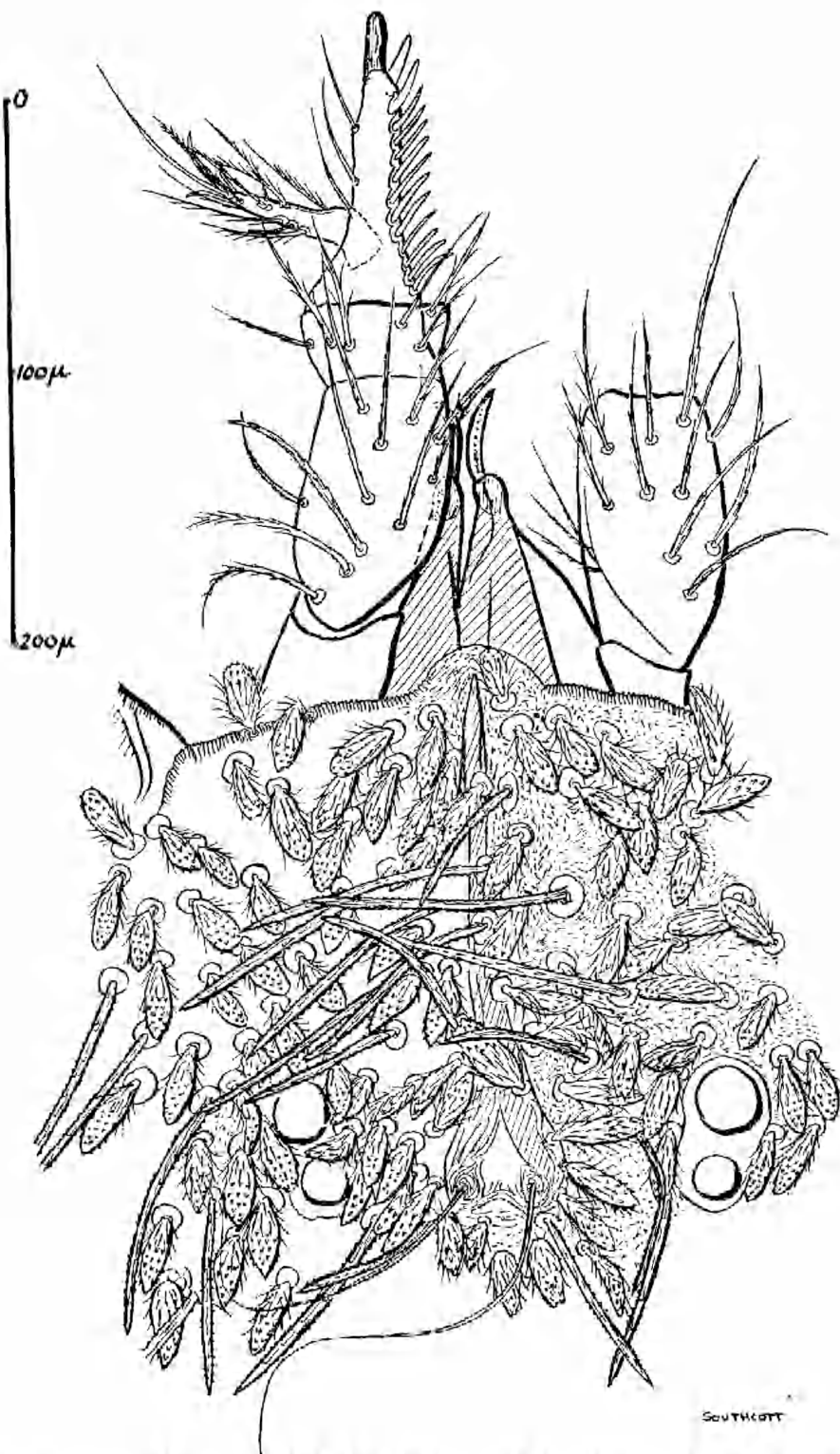


Fig. 3.—*Ctenerythraeus trombidoides* (Berlese, 1918). Nymph. Part of propodosoma and adjacent structures.

profusion of the outstanding longer dorsal setae, which, however, are rather less numerous than in the adult.

Crista as in the adult, with a single sensillary area, forming an expanded posterior bulb  $46\mu$  across. Centres of sensillae bases  $22\mu$  apart. Sensillae filiform, nude,  $173\mu$  long. Anterior end of crista pointed, ending a little indistinctly behind a dome-like projection (which evidently corresponds to the tectum of e.g. the *Lecuwenhoekinae*, but carries no setae), overhanging the chelicerae bases (see Fig. 2). Total length of crista  $188\mu$ . Sensillae bases  $15\mu$  in front of posterior end of posterior sensillary area. The reticular patterning around the sensillae bases, which is so prominent a feature in the adult, is only very slight in the nymph.

Eyes as in the adult,  $2 + 2$ , each lateral pair on a distinct obliquely placed ocular shield, sessile. Anterior eye  $21\mu$  across, posterior  $14\mu$  across.

Dorsum of body thickly clothed with two types of setae, as in the adult, but with the setae less chitinized, and somewhat sparser. Longer setae  $53-146\mu$  long; the shorter leaf-like setae  $30-39\mu$  long, pretty uniform, with blunt points over their distal half, ciliated in the proximal half and along the lateral edges, the seta somewhat flattened, though with a curved dorsum. Both types of seta arise from large seta bases, as in the adult.

The ventral surface of the body is provided similarly with two types of setae, the one spiniform-lanceolate and the other shorter and leaf-like, as in the dorsum, but in each case the setae are rather weaker. Genital aperture  $91\mu$  long, with the usual two pairs of nymphal genital suckers.

Legs similar to the adult, but a little more slender, I  $1020\mu$  long, II  $760\mu$ , III  $805\mu$ , IV  $1095\mu$  (all lengths including coxae but exclusive of tarsal claws). The setation of the legs is similar to that of the adult, there being bristle-like or lightly ciliated setae, the latter pointed or blunted. No leaf-like setae on the legs. Claws on legs as in the adult. Tarsus I rather swollen inferiorly,  $230\mu$  long by  $94\mu$  high. Other tarsi cylindrical, II  $183\mu$  long by  $46\mu$  high, III  $197\mu \times 45\mu$ , IV  $237\mu \times 45\mu$ . Metatarsus (tibia) I  $151\mu$  long, II  $115\mu$ , III  $135\mu$ , IV  $205\mu$ .

Cheliceral fangs normal for the *Trombidiidae*, and are similar to those of the adult. The movable chela (fang)  $45\mu$  long, with a dorsal row of 10 minute denticles, increasing in size posteriorly, the anterior very small, the posterior pointing back in saw-teeth.

Palpi as figured, similar to the adult, but less heavily chitinized (see Fig. 3). The setation of the palp is similar to the adult, but the setae tend to be more pointed (see Fig. 3). Palpal tibia carries 13 stout spines along its dorsomedial border; the anterior spines almost straight; the spines are directed anteromedially, and are almost parallel, except that the more posterior spines tend to be a little retroflexed and spreading. The dorsal edge of the palpal tibia is rolled over to carry these spines. The anteriormost spine the stoutest,  $26\mu$  long, and is alongside the tibial claw (Fig. 3 shows the comb more clearly than does Fig. 1 B for the adult). Palpal tibial claw stout,  $38\mu$  long.

Palpal tarsus as figured (Fig. 3), slender, with numerous setae, ciliated generally or unilaterally; one solenoidal (striate) seta present, arising about halfway along the tarsus as figured; terminally the tarsus has a group of curved spiniform setae, the terminal the longest, and  $66\mu$  long.

*Locality.* The two specimens examined are: adult (ACB 608) and nymph (ACB 609), from Mt. Mori, New Caledonia, at 4000 feet, among leaf mould, March 1955, collected by L. J. Dumbleton; in author's collection.

#### *The Systematic Position of Ctenerythraeus*

As indicated above, a comparison of the two fresh specimens received from Mr. Dumbleton reveals no significant point of difference from Berlese's account.

Apart from some of the minor description of the palpi, where Berlese's account is obscure (commented on above) the correspondence is obviously good. The writer therefore sees no reason to doubt that *Ctenerythraeus* Berlese 1918 is the same as *Spathulathrombium* Womersley 1945. Womersley's (1945) definition of *Spathulathrombium* reads as follows:

"As in *Echinothrombium*<sup>\*</sup> with the larger dorsal setae long and spine-like, but the smaller setae spathulate with ciliations or setules. The posterior arm of the crista very evanescent, almost invisible, so that the sensillary area appears to be posterior. In all known species the palpal tibia without any external spine, distal portion of tibia slender, almost twice as long as basal part.

"Genotype *M. (icrotrombidium) southcotti* Wom. 1934".

The specimens described in the present paper answer to Womersley's definition of *Spathulathrombium*.

Apart from the genotype (*C. trombidioides* (Berl. 1918)) the genus *Ctenerythraeus* now contains *C. southcotti* (Wom. 1934) (the genotype of *Spathulathrombium* Wom. 1945), *C. maximus* (Wom. 1945), *C. queenslandiae* (Wom. 1942), *C. fulgidus* (Wom. 1945), and *C. myloriensis* (Wom. 1945). All these species of Womersley are Australian. *C. southcotti* was captured by the writer near Karkar, National Park, Belair, South Australia, 1st February 1934 (and not as shown by Womersley (1934) (1945)). In 1945 Womersley described "*S. queenslandiae* n. sp." from Gympie, Queensland, April 27th 1940, collected by D. J. W. Smith, overlooking the fact that he had described this species as *Echinothrombium queenslandiae* in 1942. *C. fulgidus* (Wom. 1945) came from Robe, South Australia, 13th October 1943 (coll. H. Womersley), and *C. myloriensis* (Wom. 1945) from Mylor, South Australia, 14th September 1935 (coll. H. Womersley). Of these species *C. trombidioides* (Berl. 1918) comes nearest to *C. myloriensis*. The differences between the adults of these two species can be seen from the tabular data below.

	Body	Macrosetae length	Microsetae length	Tarsus I	Meta-tarsus I	Sensillary bases
<i>C. myloriensis</i> (Wom. 1945) (after Womersley 1945)	L. 2.55mm W 1.35mm	to 120 $\mu$	56 $\mu$	L. 285 $\mu$ W 93 $\mu$	185 $\mu$	21 $\mu$
<i>C. trombidioides</i> (Berl. 1918) (ACB 608)	L. 1.97mm W 1.25mm	77-190 $\mu$	34-42 $\mu$	L. 420 $\mu$ W 175 $\mu$	358 $\mu$	43 $\mu$
<i>C. trombidioides</i> (Berl. 1918), type specimen (after Berlese 1918)	L. 2.8mm W 1.65mm	150-200 $\mu$	to 50 $\mu$	L. 500 $\mu$ W 120 $\mu$	500 $\mu$	—

As can be seen from the foregoing table, the easiest character by which the two species may be separated is on the length of the macrosetae: in *C. myloriensis* they are to 120 $\mu$  long (according to Womersley 1945); in *C. trombidioides* they are longer, to 200 $\mu$ .

\* The genus *Echinothrombium* Womersley 1937 (with type *Otonia spinosa* Canestrini 1885 from Europe (not 1877, as Womersley stated in 1937 and 1945)) is the adult of the genus *Ettmülleria* Oudemans 1911, the latter genus therefore having priority. This opinion by the writer is based on his rearing on a number of occasions of the larva of the Australian species *Microtrombidium willungae* Hirst 1931 = *Echinothrombium willungae* (Womersley 1945) (adult forms) = *Ettmülleria* cf. *obscura* Womersley 1936 (larval). This species should therefore be re-named *Ettmülleria willungae* (Hirst 1931). These experiments will be described in a later paper.



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